

August 18, 2000

Ms. Magalie Roman Salas
Secretary
Federal Communications Commission
445 12th Street, S.W.
Washington, DC 20554

RE: Ex Parte Response in CC Docket No. 94-102

Dear Ms. Salas:

Motorola, Inc. ("Motorola"), Nokia Inc. ("Nokia") and Ericsson Inc. ("Ericsson") wish to take this opportunity to discuss information presented to the Commission in a series of *ex parte* filings by QUALCOMM Incorporated ("QUALCOMM") concerning the provision of location-enabled handsets.¹ Motorola, Nokia and Ericsson, as leading manufacturers of wireless handsets, would like to provide the Commission with additional insight to the claims of QUALCOMM, especially concerning the potential availability of handset-based location services.

In its *ex parte* filings, QUALCOMM describes a "typical" production schedule for its Asian customers as 6 months from the time they receive chipsets and a reference design to the time they have a commercial product,² states that technology does exist for manufacturers to produce GPS-capable handsets in compliance with existing guidelines while arguing that Motorola, Nokia, and Ericsson had access to this technology for more than a year,³ and asserts that technology used in European trials could be used by U.S.-based GSM carriers if they requested their handset manufacturers to make handsets including it.⁴

Production timelines. As Motorola, Nokia and Ericsson have discussed with the Commission in previous meetings and at the July location roundtable meetings, a production volume handset cannot be provided sooner than 18 months after delivery of an actual, volume commitment order from a customer. In describing its Asian counterparts as providing commercial products within six months of delivery of chipsets and a reference design, QUALCOMM misleads the Commission to believing that this example is representative of the effort needed to implement and validate a new cellular product, which also includes a GPS receiver. In particular, integration of a GPS receiver requires the addition of an entirely new subsystem, rather than a simple upgrade of the existing handset chipset. This incurs new system level development issues, such as the ability of the GPS receiver to interoperate when the wireless handset is transmitting.

¹ See *Ex Parte* Presentations by QUALCOMM Incorporated dated July 7, 2000; July 17, 2000; July 24, 2000; July 27, 2000; July 28, 2000.

² See *Ex Parte* Presentation of QUALCOMM, July 7, 2000, at 2.

³ See *Ex Parte* Presentations of QUALCOMM, July 17, 2000, at 1; July 7, 2000 at 9 & 11 (Qualcomm, without explanation, included as attachments a copy of a press release noting that Ericsson selected SiRF GPS technology and describing Nokia's \$3 million investment in SiRF Technology).

⁴ See *Ex Parte* Presentation of QUALCOMM, July 28, 2000, at 1-2.

Additionally, carriers and manufacturers of product for use in the United States must meet rather substantial location accuracy requirements for emergency phone calls. Despite QUALCOMM's claims to the contrary, testing and development of its chipsets have not been completed in detail sufficient to absolutely guarantee that the location accuracy standards will be met in the large scale commercial deployments required to make an E911 program effective.

Finally, and most crucially, QUALCOMM's purported solution is only developed for CDMA products. A look at QUALCOMM's web site reveals, in Attachment A, its location technology path. In Figure 2 of this attachment two phone solutions are diagrammed. The first shows the SnapTrack MM-ASIC that would be the method for non-CDMA air interfaces to enable handsets with location capability. The SnapTrack MM-ASIC is not currently available for commercial use, despite the recent tests of prototype equipment in Europe (which is discussed further *infra*). In particular, Motorola, Nokia and Ericsson firmly believe that the electrical specifications of the QUALCOMM chipset being proposed for non-CDMA platforms are presently not suitable for wireless handset integration. While certainly QUALCOMM has a plan for modifying the present chipset to rectify these deficiencies, no committed plan has been released by QUALCOMM for when this solution would be available for integration. Finally, the entire MM-ASIC chipset (including baseband and RF) is not at all optimized for low power. In summary, the proposed SnapTrack non-CDMA system configuration would be a drain on battery life, cause a larger handset product, and is otherwise unavailable in time to meet the FCC's timeline for volume shipments. Motorola Nokia and Ericsson therefore believe that this is not a suitable option for wireless carriers to pursue.

Technology availability. QUALCOMM also indicates that Motorola has had access to its location technology for better than a year to implement into wireless handsets. Motorola disagrees. Motorola entered into a licensing agreement with SnapTrack for its 1st generation DSP-based technology solution but quickly concluded (along with other handset manufacturers and chipset makers) that the solution was not a good architecture for wireless handsets and needed to be improved and modified for commercial volume products. As this process began to modify the existing SnapTrack product, SnapTrack was purchased by QUALCOMM, delaying necessary changes to the solution. Therefore, no handset manufacturers are pursuing the original SnapTrack solution and instead have been pursuing other technology paths, which has added more time to the development process. Most telling of all, again studying the QUALCOMM location solution in Attachment A, QUALCOMM is also **not** implementing either the SnapTrack DSP-based or MM-ASIC-based solution in its MSM3300 chipset solution (see second block diagram in Figure 2). Therefore, to base any representation of handset manufacturer capabilities on the licensing of technology that is not being used in the marketplace is inappropriate.

Moreover, the gpsOne solution that is implemented in the MSM3300 chipset is not present in the next generation chipset to be provided by QUALCOMM, the MSM5105. This is significant because the MSM3300 chipset only supports the current CDMA standards (IS95A and IS95B) but does not support next generation CDMA standard (CDMA2000). Therefore, manufacturers are faced with a proposed solution that

will potentially be acceptable for the current generation of CDMA handsets, but may not incorporate the functionality of next generation handsets that is required by carriers and consumers.

European tests. QUALCOMM also discusses the recent GSM tests in Europe as demonstrating the ability of U.S. GSM carriers to implement GPS solutions in compliance with Commission location guidelines. The prototype products used in the European tests were provided by Motorola, and as such, Motorola is in a position to comment on these tests. The handsets used in the European tests were not form factor handsets and were not integrated in any fashion. As Attachment B, Motorola provides a photograph of the prototype handset used in these tests that clearly shows GPS functionality has not been integrated into the handset.

Therefore, acceptable commercial handsets have not even begun to be tested nor could any be put into the kind of volume production needed to meet the Commission guidelines in a timely fashion. The tests that QUALCOMM refers to are the beginning of the process for determining the capability of GPS location technology within the GSM framework. Nor do the tests demonstrate that the time-consuming development work necessary to integrate location technology into GSM has been completed. Given our extensive experience with the development and production of GSM handsets, Motorola, Nokia and Ericsson submit that this process has only just begun and will span a much more extensive timeframe than offered by QUALCOMM.

Motorola, Nokia and Ericsson believe the Commission desires to achieve a balanced and fair decision while moving forward aggressively to implement Phase II requirements. Skimming over the differences in wireless air interfaces, overly generalizing, overstating capabilities, and exaggerating development progress without sharing supporting facts with industry, as QUALCOMM has in the record of this proceeding, will not achieve the Commission's objectives.

Sincerely,

Mary Brooner
Director, Telecommunications Strategy & Regulation
Motorola

Barbara Baffer
Director, Regulatory Affairs
Ericsson Inc.

Leo R. Fitzsimon
Director, Regulatory and Industry Affairs
Nokia Inc.

Attachment B

Antennas

Separate antennas for cellular and GPS

Motorola L Series Phone

- Position and Voice simultaneously
- SMS messages contain location

GPS Accessory

Contains separate GPS RF and Baseband boards
- MM-ASIC NOT used



Phone - GPS Interface

RS232 Interface

Separate battery connections

SnapTrack GSM Test Group

- Motorola supplied the handsets for the field trial.
- The handset and GPS sensor were not integrated into a single unit.
 - The handset was modified to interface to the accessory.
 - The GPS sensor was a detachable accessory.
- No QUALCOMM IC's were used in the field trial phone.
 - The GPS sensor hardware was same as that used in the Tampa field trials 1 1/2 years ago.
 - The GPS sensor hardware used in the field trial uses a multiple chip RF front-end, a separate A/D, an Analog Devices DSP and separate memory chips.
- MM-ASIC was not used in this field trial.
 - Motorola has no product development experience with the MM-ASIC.